Fermilab

TD-6060

TECHNICAL DIVISION
MACHINE SHOP MATERIAL RECEIVING PROCEDURE

PREPARED BY _____ **DATE** _____
M. Herr, TD Radiation Safety Officer

REVIEWED BY _____ **DATE** _____
R. Sood, TD Support Department Head

ACCEPTED BY ***Original signed by Thomas Dombeck for PJL 2/24/99*** **DATE** _____
P. Limon, TD Head

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1.0 PURPOSE & SCOPE

The purpose of this document is to provide controls for the receipt of materials and to prevent the inadvertent machining of radioactive materials in the TD Machine Shop Department.

This procedure applies to all unlabled materials or any other suspect materials that are are brought to the Technical Division Machine Shop Department by the Beams Division, Particle Physics Division, Technical Division, Business Services Section, Facilities Engineering Services.

2.0 QUALIFICATIONS

The personnel performing the material surveys required by this procedure are identified by the Machine Shop Department Supervisor and must complete the following training:

- Radiological Worker (Course # FN0000243)
- Technical Division Machine Shop Surveyor (Course # TD606001)

3.0 PROCEDURE FOR UNLABELED MATERIAL

3.1 All unlabeled material received by the TD Machine Shop Department must be surveyed by a qualified person as defined in Section 2.0 of this procedure.

3.2 The survey must be conducted in accordance with one of the following procedures, dependent upon the type of instrument used.

3.3 Frisker Survey Procedure

1. Perform instrument checks for: the instrument's general physical condition, battery (if applicable), and calibration date. Perform the instrument's source response check.

2. If the instrument fails any of the checks; DO NOT USE THE INSTRUMENT. Contact the local Radiation Monitor or the TD RSO to have the instrument exchanged.

3. Set the scale selector switch to the "X 1" position. Turn the speaker on and turn the volume all the way up.

4. Note the background reading. If background is more than 50 cpm, you cannot use the instrument in this area. Move to an area that is less than 50 cpm.

5. Survey the item by holding the probe within ¼" to ½" of the material's surface. Scan the surface of the material at a rate of 1" to 2" per second. If count rate increases, pause over the area 15 to 30 seconds and note the reading.

6. If the reading is 50 cpm above the background reading, **immediately** call the TD RSO. DO NOT MACHINE THE MATERIAL.

7. If the reading is less than 50 cpm above background, repeat step 5 until **all** accessible areas have been surveyed. If there are any areas inaccessible to a survey, contact the TD RSO.

8. After all areas have been surveyed and no readings were 50 cpm above background, complete and attach the Technical Division Machine Shop Survey Sticker to the job ticket.

3.3 Bicron Analyst Procedure

1. Perform instrument checks for: the instrument's general physical condition, battery, and calibration date. Perform the instrument's source response check.

2. If the instrument fails any of the checks; DO NOT USE THE INSTRUMENT. Contact the local Radiation Monitor or the TD RSO to have the instrument exchanged.

3. Set the scale selector switch to the "X 10" position. Turn the speaker on and turn the volume all the way up.

4. Note the background reading. If the background reading is greater than 3000 cpm; you cannot use the instrument in this area. Move into an area that is less than 3000 cpm.

5. Scan the surface of the material at a rate of 1" to 2" per second. If count rate increases, pause over the area 15 to 30 seconds and note the reading.

6. Compare the reading with the below table to determine if the material is considered radioactive.

Background Reading (Bkgd)	**Readings Required for the Material to be considered Radioactive**	**Examples**
< 2000 cpm	2 times the background reading.	If Bkgd =1800 cpm Any reading 3600 cpm or greater, the material is considered radioactive.
>2000 cpm ≤ 3000 cpm	2000 cpm above background	If Bkgd =2200 Any reading 4200 cpm or greater, the material is considered radioactive.
> 3000 cpm	Do not use the instrument in this area. Move to a lower background area.	Not applicable.

7. If the material is found to be radioactive, **immediately** call the TD RSO. DO NOT MACHINE THE ITEM.

8. If the readings do not indicate that the item is radioactive, repeat step 5 until **all** accessible areas have been surveyed. If there are any areas inaccessible to a survey, contact the TD RSO.

9. After all areas have been surveyed and the material is determined not to be radioactive, complete and attach the Technical Division Machine Shop Survey Sticker to the job ticket.

4.0 PROCEDURE FOR RADIOACTIVE MATERIAL

4.1 The machining of radioactive material must first be approved by the TD RSO prior to the delivery of any radioactive materials to the TD Machine Shop Department.

4.2 The TD RSO will determine the controls necessary to do the machining in accordance with the Fermilab Radiological Control Manual.